

DRAWINGS ATTACHED

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(54) A GOLF CLUB SHAFT BLANK, A CLUB MADE THEREFROM, A METHOD OF MAKING A SET OF SUCH CLUBS, AND THE RESULTANT SET OF CLUBS

(71) We, BRUNSWICK CORPORATION, a Corporation organised and existing under the laws of the State of Delaware, United States of America, of 69 West Washington Street, Chicago, Illinois, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

In the conventional method of manufacturing and assembling golf clubs, a plurality of different club shafts have been utilized with a different shaft for each numbered club, for each flex characteristic, and for each length. Generally, there are four different flex characteristics for each numbered club, i.e. a number 1 wood can be had in either a number 1, 2, 3 or 4 flex (from stiffest to most flexible), and a club with any of these flex characteristics can be either short, medium or long to suit short, average height and tall users respectively. Most golfers have sets of 4 woods and 9 irons, which a manufacturer must be prepared to supply in any one of the four flexes and three lengths, so that it would be necessary to have possibly as many as 156 different stock shafts or even more.

The stocking of a large plurality of different shafts presents a serious inventory, and thus cost, problem.

The present invention avoids the disadvantages of the above discussed method of manufacture and assembly of such golf clubs by utilizing a common shaft blank for the production of the shaft of any one of the different clubs of a set in any one of the different flex characteristics and in any one of the different lengths required.

The invention includes a golf club shaft blank, capable of being cut to form a golf club shaft having any one of a variety of different flexibilities and lengths, the cross-

sectional dimensions and stiffness of said blank decreasing, either continuously or stepwise, along the length of the blank from a handle end portion to a head end portion, so that removing a length from the handle end portion of the blank will increase its flexibility, the head end portion of the blank being of uniform cross-section over a length greater than the difference in length between the longest and the shortest shafts required, so that the fit between the head end portion and the hosel of a golf club head will not be affected by removing a length from the head end portion of the blank to give a shaft of the required length.

The invention further includes a method of making a set of golf clubs comprising the steps of: providing a plurality of different club heads, one for each club of the set; providing a plurality of identical shaft blanks, one for each club of the set, each blank being of the form defined in the preceding paragraph; removing different lengths from the head end portions of the respective shaft blanks to produce shafts of different lengths, appropriate to the different club heads; and assembling the club heads to the corresponding shafts.

The invention also includes a golf club having a shaft made from such a blank and golf clubs made by such a method.

The invention is further described below with reference to the accompanying drawings wherein:

Figure 1 is an elevation of a shaft blank embodying the invention;

Figure 2 is an elevation of the shaft blank having the handle end thereof adjusted to provide a different flex characteristic;

Figure 3 is an elevation of the shaft blank having the head end adjusted to provide a different length;

Figure 4 is an elevation of the shaft blank having both the handle end and head

end adjusted to provide a different flex characteristic and length;

Figures 5a, 5b, 5c and 5d are elevations of four woods cut to different flex characteristics and providing for tall, average and short golfers; and

Figure 6 is a fragmentary elevation of a club shaft having the head mounted thereon.

As shown in the drawing, a golf club shaft blank generally designated 10 comprises an elongated element having a handle end portion 11, head end portion 12, and a mid, or shank, portion 13. The shank portion progressively decreases in cross-sectional dimensions (and thus increases in flexibility, or decreases in stiffness) along its length from the handle end portion to the head end portion. As shown, the progressive decrease is stepwise, but a conventional continuously tapered shank portion (not shown) may be employed. The head end portion 12 is of constant cross-section throughout its length.

As is conventional in golf club construction, the length of the shaft will vary according to the number of the club and will also vary depending on whether the club is to be utilized by a short, average height, or a tall golfer.

Further, in conventional matched sets of golf clubs, each matched set will have one predetermined flex characteristic such as a number one, two, three or four flex. A number one flex is the stiffest flex while the number 4 flex is the softest flex with numbers 2 and 3 falling incrementally therebetween.

The blank 10 is initially made with an axial length somewhat greater than the longest and stiffest club shaft contemplated, for instance 48 inches, permitting the head end 12 to be trimmed and inserted in the desired club head hosel and the handle end 11 to be trimmed and fitted with an appropriate hand grip, to provide a shaft of the desired length and flex. The handle end 11 may have a length before cutting of approximately 12 inches to ensure that even after maximum trimming it will have sufficient length to receive a conventional hand grip and the head end 12 may have a length before cutting of slightly over 12 inches to ensure that even after maximum trimming sufficient of this constant cross-section portion will remain to engage with the hosel of the club head.

The blank 10 can have its flex characteristic adjusted by adjusting the length of the handle end 11 as shown in Figure 2, wherein the handle end 11a is incrementally shorter than the handle end 11 of blank 10 to define a shaft 10a. As shown by dotted lines in Figure 2, additional increments of lengths may be removed to incrementally shorten the handle ends.

Referring now to Figure 3, the head end of the blank may be incrementally shortened to provide a shortened club shaft 10b as but cutting the head end 12b. As shown in dotted lines in Figure 3, any one of a number of different length clubs may be provided by cutting the head end at different dotted line positions spaced axially therealong.

As shown in Figure 4, in producing a club shaft, each of the handle end 11c and the head end 12c of the blank may be cut to define a further adjusted club 10c wherein both the desired flex characteristic and length of the club are secured by adjusting the length of the opposite ends 11c and 12c.

More specifically, the longest club is conventionally a number 1 wood adapted for use by a tall user. Such a club, illustratively, may have a shaft length of 44 inches. Such a club adapted for a short user may have a shaft length of 41 inches. Such a club may have a number 1 flex provided by utilizing the full length handle end 11 of blank 10. The number 1 wood can have any one of four different flexes by incrementally shortening the handle end 11. As an example, removing approximately one inch from the handle end 11 will change the flex characteristic from a number 1 flex to a number 2 flex. A further shortening of one inch will change the flex to a number 3 flex, and so on.

Figures 5a, 5b, 5c and 5d illustrate the manner of utilizing the invention to produce different matched sets of clubs. Figure 5a shows four of the improved blanks 10 with the designations, on the left, of number 1, 2, 3 and 4 woods down from the top. The blanks of Figure 5a have been cut for number 1 flex characteristic by the handle ends 11 all being the same length (n inches for example). On the right or head end 12 of Figure 5a, three diagonal lines have been drawn, the left most line 20 being for golfers requiring a short shaft, the middle line 21 being for average height golfers and line 22 being for tall or long armed golfers. Therefore, a short golfer wanting a number 1 flex set of wood clubs would have the four shafts cut so as to coincide with the lengths subtended by the line 20. The handle grips and club heads for a Number 1, 2, 3 and 4 wood would be mounted on each shaft to secure a matched set of number 1 flex woods for a short golfer.

Figure 5b is similar to Figure 5a except that the handle ends 11 have been cut to provide number 2 flex characteristics, for example, handle ends 11 could be (n-m) inches. Figure 5c is provided for number 3 flex characteristics by the handle ends 11 being cut to the desired length there-

for, for example, handle ends cut to (n-2m) inches. Figure 5d is provided for number 4 flex characteristics by the handle ends 11 being cut to the desired length therefor, for example, the handle ends being (n-3m) inches long. In the illustrations of Figures 5a, 5b, 5c and 5d, one shaft blank is shown as being capable of being used for 48 different clubs, each club shaft having a different combination of flex and length.

Conventionally, the difference between the length of the shafts for a Number 1 and for a Number 4 wood club is approximately 3 inches. Further, the variation in length of the club as between a club adapted for use by a short person and a similar club adapted for use by a tall person may be approximately 4 inches. By making the constant cross-section head end portion 12 slightly greater than 12 inches in length, the entire range of length adjustments may be accommodated by removing part only of this head end portion, leaving sufficient of it to accommodate the mounting thereon of the hosel of the club head.

It will be obvious without further illustration that the same principle can be applied to the production of shafts for the 9 regular irons in a matched set. Sets of nine identical shaft blanks could be cut at the handle end to provide sets of shafts having each of the four flex characteristics and sets with each flex can be cut at the head end to correspond with each club number, and to adapt the shaft for short, average or tall users: a total of up to 108 different golf club shafts. (Sometimes the shaft length is not changed with each different number iron club but is changed only in three or four increments throughout the range of the conventional nine club iron set.)

Shafts for complete sets of (say) 13 clubs with any one of (say) four flex characteristics, suitable for golfers in any one of (say) three height brackets (a total of 156 variants) can be produced from identical, standard blanks. In practice, however, it may be desirable to have two or three standard blanks instead of just the one, each of the standard blanks being used to produce shafts for a set comprising a smaller number of clubs. For instance, one blank could be used for all woods and a separate blank for all irons.

As shown in Figure 6, a club head, illustratively a wood club head 15, is mounted on the end of the shaft in the conventional manner. A hand grip 17 is secured over the handle end portion 11 in the conventional manner. It will be understood that the sets of shafts produced in the manner described

above are intended to be similarly assembled with the corresponding ones of sets of different club heads to produce matched sets of golf clubs.

WHAT WE CLAIM IS:—

1. A golf club shaft blank, capable of being cut to form a golf club shaft having any one of a variety of different flexibilities and lengths, the cross-sectional dimensions and stiffness of said blank decreasing either continuously or stepwise, along the length of the blank from a handle end portion to a head end portion, so that removing a length from the handle end portion of the blank will increase its flexibility, the head end portion of the blank being of uniform cross-section over a length greater than the difference in length between the longest and the shortest shafts required, so that the fit between the head end portion and the hosel of a golf club head will not be affected by removing a length from the head end portion of the blank to give a shaft of the required length.

2. A golf club shaft blank, substantially as herein described with reference to the accompanying drawing.

3. A golf club having a shaft made by removing a length from one end, or from each end, of a blank in accordance with claim 1, or claim 2.

4. A method of making a set of golf clubs comprising the steps of: providing a plurality of different club heads, one for each club of the set; providing a plurality of identical shaft blanks, one for each club of the set, each blank being in accordance with claim 1, or claim 2; removing different lengths from the head end portions of the respective shaft blanks to produce shafts of different lengths, appropriate to the different club heads; and assembling the club heads to the corresponding shafts.

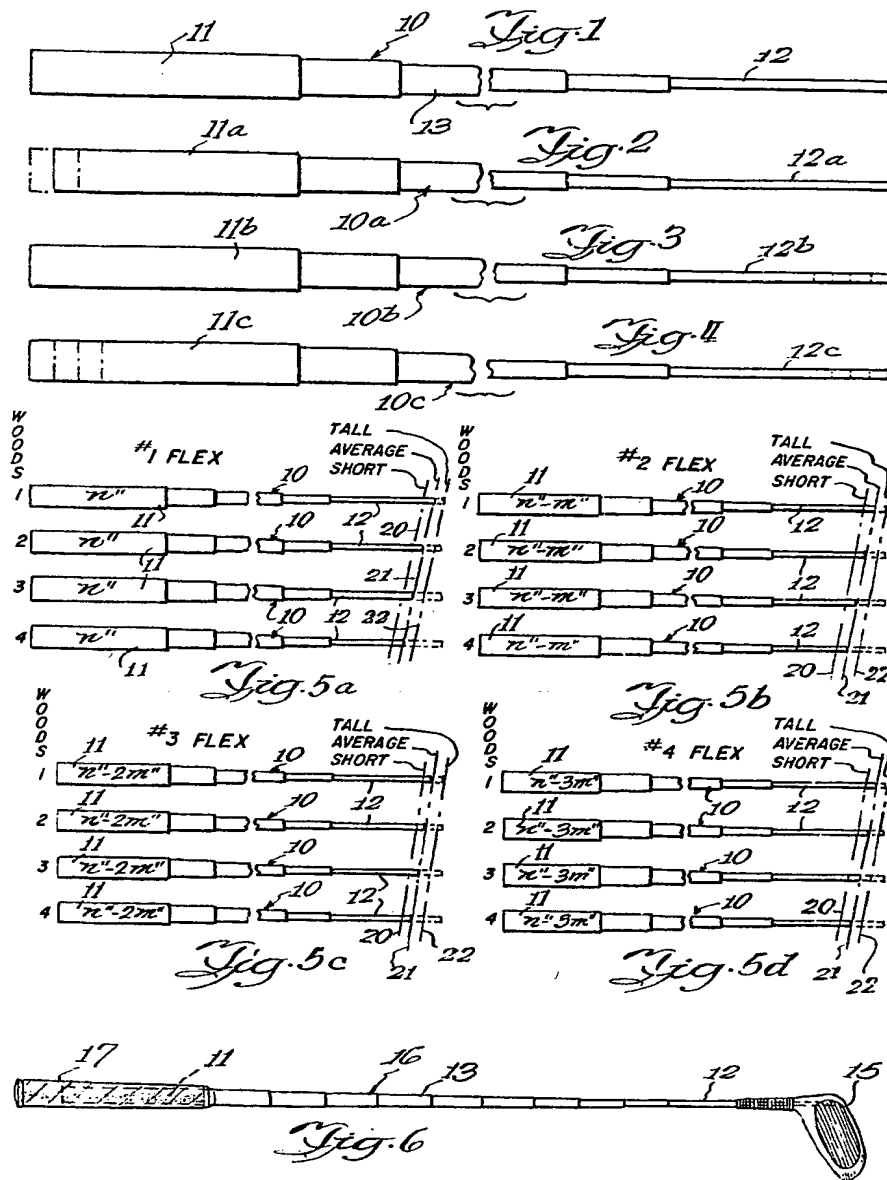
5. A method in accordance with claim 3, further comprising the step of removing equal lengths from the handle end portions of all the shaft blanks to increase the flexibility of the resultant shafts.

6. A method of making a set of golf clubs substantially as herein described with reference to the accompanying drawing.

7. A set of golf clubs made by a method in accordance with any of claims 3 to 5.

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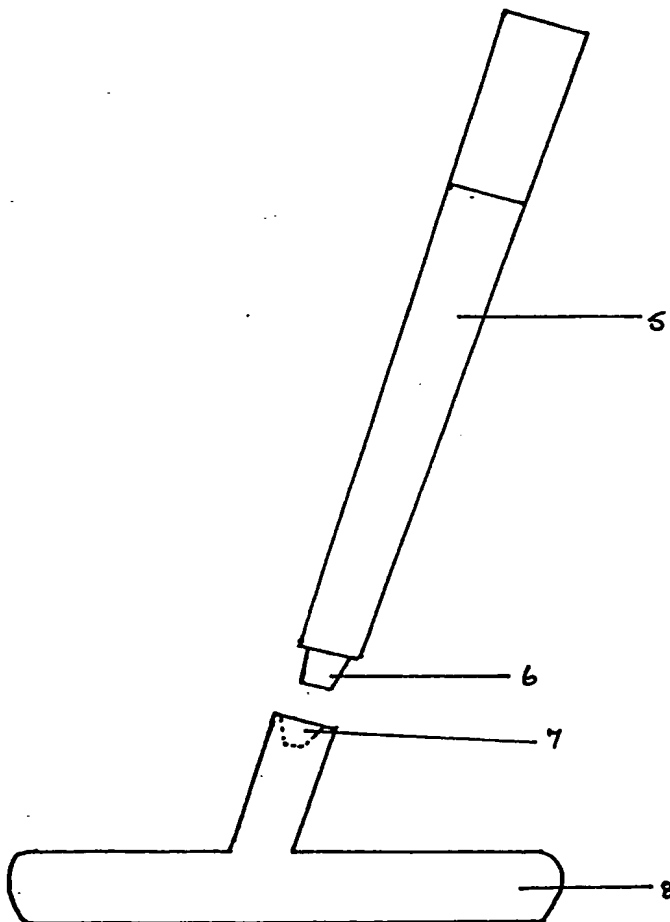
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(54) **Detachable golf putter head**

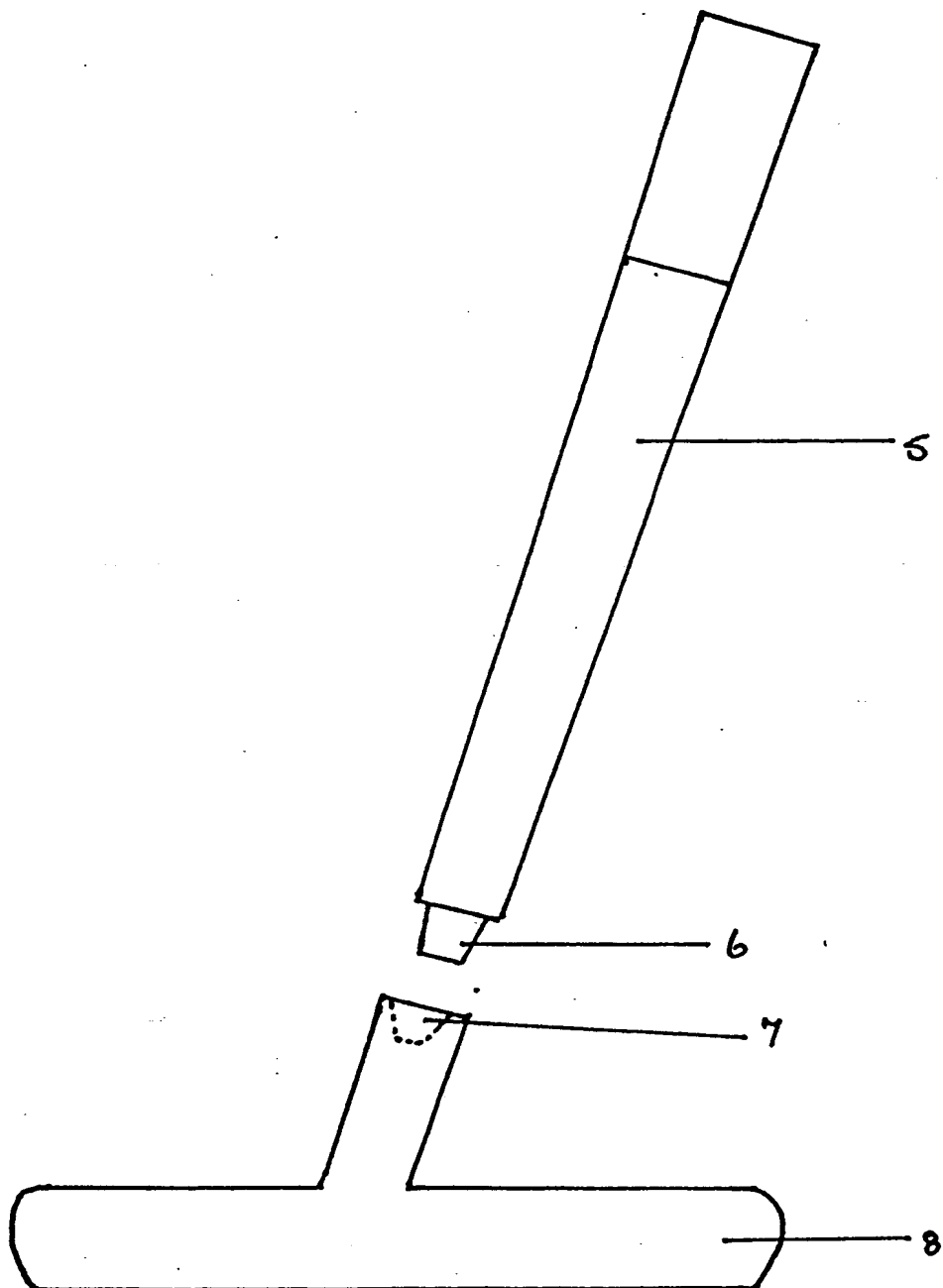
(57) A golf putter has a shaft 5 and a head 8 which are connected by a threaded or bayonet fixing allowing the head and shaft to be engaged or disengaged when required.



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FIG. 1

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SPECIFICATION

Detachable golf putter head

- 5 This invention relates to a detachable golf putter head.

The need to change a putter is usually for the weight or style of the head. This invention allows for a variety of putter heads for use in
10 different conditions to be attached to your existing shaft.

TECHNICAL

- The connection between the shaft and head
15 is made by a threaded or bayonet connection.

REFERRING TO DRAWING

- The putter is shown in Fig. 1 in its separated form. The shaft 5 has a threaded or
20 bayonet fixing at its base 6 the head 8 has a threaded or bayonet fixing 7 designed to effect a connection with the shaft 5.

The threaded section may be left or right hand thread.

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CLAIMS

A detachable golf putter head which by means of a threaded or bayonet connection can be attached to a shaft.

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